

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A01N 59/16, G01N 21/45, A61L 15/18, 31/00, A61F 13/00	A3	(11) International Publication Number: WO 98/41095 (43) International Publication Date: 24 September 1998 (24.09.98)
(21) International Application Number: PCT/CA98/00102 (22) International Filing Date: 17 February 1998 (17.02.98) (30) Priority Data: 08/818,869 17 March 1997 (17.03.97) US (71) Applicant (for all designated States except US): WESTAIM TECHNOLOGIES INC. [CA/CA]; 10102 - 114 Street, Fort Saskatchewan, Alberta T8L 3W4 (CA). (72) Inventors; and (75) Inventors/Applicants (for US only): BURRELL, Robert, Edward [CA/CA]; 52055, R.R. 221, Sherwood Park, Alberta T8E 1C6 (CA). PRECHT, Roderick, John [CA/CA]; 13143 - 34 Street, Edmonton, Alberta T5A 3K1 (CA). (74) Agent: McKAY-CAREY, Mary, Jane; McKay-Carey & Company, 2125 Commerce Place, 10155 - 102nd Street, Edmonton, Alberta T5J 4G8 (CA).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 11 March 1999 (11.03.99)
(54) Title: ANTI-MICROBIAL COATINGS HAVING INDICATOR PROPERTIES AND WOUND DRESSINGS (57) Abstract <p>Multilayer anti-microbial materials formed to produce an interference colour, and thus an indicator of anti-microbial effect, are provided. The materials include a partly reflective base layer and a partly reflective, partly transmissive top layer balanced to produce an interference colour. The top layer is formed from an anti-microbial metal with atomic disorder. Dissolution or a change in composition of the top layer on contacting an alcohol or electrolyte causes a change in optical path length so as to produce a change in the interference colour of the material. Multilayer, laminated wound dressings are also provided. The dressing includes a first and second layer, and preferably a third layer. The first and third layers are formed of perforated, non-adherent materials and most preferably carry an anti-microbial coating as above. The second layer is sandwiched between the first and third layers and is formed of an absorbent material. At least one of the layers is formed from a plastic material. The layers are laminated together by ultrasonic welds spaced intermittently on the dressing to allow the dressing to be cut to size with delaminating.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav	TM	Turkmenistan
BF	Burkina Faso	GR	Greece		Republic of Macedonia	TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's	NZ	New Zealand		
CM	Cameroon		Republic of Korea	PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 98/00102

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A01N59/16 G01N21/45 A61L15/18 A61L31/00 A61F13/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A01N A61L A61F G01N B29C B32B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 95 13704 A (WESTAIM TECHNOLOGIES INC ;BURRELL ROBERT EDWARD (CA); APTE PRASAD) 26 May 1995 see the whole document	1-46
X	see page 17, line 14 - page 18; examples 1,6,7,13,22 & US 5 454 886 A cited in the application	1,9-14, 22-26
A	WO 93 23092 A (WESTAIM TECHNOLOGIES INC ;BURRELL ROBERT EDWARD (CA); MORRIS LARRY) 25 November 1993 see the whole document	1-46
X	see page 9, line 26 - page 10, line 27; examples 1,6,7,13	1,9-14, 22-26
	--- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

12 January 1999

Date of mailing of the international search report

21. 01. 99

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040 Tx 31 651 800 01

Authorized officer

INTERNATIONAL SEARCH REPORT

Interr 1st Application No

PCT/CA 98/00102

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 395 300 A (ALCAN INT LTD) 31 October 1990 see the whole document & US 5 124 172 A cited in the application ---	1-46
A	EP 0 430 608 A (SQUIBB & SONS INC) 5 June 1991 see page 2, line 20 - page 3, line 15 ---	1-46
A	DATABASE WPI Week 88201988 Derwent Publications Ltd., London, GB; AN 88-136448 XP002070661 & JP 63 078051 A (TEIJIN LTD) see abstract ---	1-46
A	WO 92 11043 A (Q LIFE SYSTEMS INC) 9 July 1992 see page 1 - page 6 ---	1-46
A	EP 0 255 248 A (MINNESOTA MINING & MFG) 3 February 1988 see page 2 - page 4, line 13 ---	1-46
X	GB 2 132 939 A (WYCOMBE MARSH PAPER MILLS LTD) 18 July 1984 see page 1, line 19 - line 22 see page 1, line 46 - line 60 see page 2, line 10 - line 29; claims ---	27
Y	GB 2 281 212 A (ROBINSON & SONS LTD) 1 March 1995 see page 1 - page 3 see page 4, last paragraph - page 5, paragraph 1 ---	27
Y	GB 2 298 612 A (BRITISH UNITED SHOE MACHINERY) 11 September 1996 see page 1, line 1 - line 33 see page 2, line 36 - page 3, line 9 see page 2, line 6 - line 19 see page 4, paragraph 16 - paragraph 30 ---	27
A	GB 2 121 355 A (POWNALL DAVID) 21 December 1983 see page 1, line 4 - line 38 see page 1, line 125 - page 2, line 1 ---	27-29

-/--

INTERNATIONAL SEARCH REPORT

Inter. Appl. No.

PCT/CA 98/00102

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 030 302 A (JUD WILFRIED ET AL) 9 July 1991 see column 1, line 10 - line 21 see column 2, line 14 - line 68 see column 4, line 18 - line 39; figures 1,2 -----	27-29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 98/00102

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-26 and 30-46 (all completely),
27-29 (all partially)

A multilayer antimicrobial material comprising:

- a) a base layer capable of generating interference colour when covered with a partly reflective, partly transmissive top layer,
 - b) such a top layer in a interference colouring generating thickness, having a refractive index different from that of the base layer, containing an antimicrobial metal in sufficient atomic disorder to provide in contact with alcohol or water based electrolytes a localized antimicrobial effect;
- a process for producing such a multilayer antimicrobial material
- a wound dressing comprising a layer coated with said multilayer antimicrobial material

2. Claims: 27-29 (all partially)

A multilayer, laminated wound dressing, comprising:

- a) a first layer of a perforated, non-adherent material
 - b) a second layer of an absorbent material
- the first and second and optional third layer, of which at least one is of a plastic material, are laminated together by ultrasonic welds spaced intermittently on the dressing so as to allow the dressing to be cut down in size without causing delamination.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 98/00102

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9513704 A	26-05-1995	US 5454886 A	03-10-1995
		AU 8055194 A	06-06-1995
		BR 9408225 A	26-08-1997
		CA 2136454 A	19-05-1995
		CA 2136455 A	19-05-1995
		CN 1140977 A	22-01-1997
		EP 0729302 A	04-09-1996
		EP 0875146 A	04-11-1998
		HU 75526 A	28-05-1997
		JP 9505112 T	20-05-1997
		NZ 275066 A	24-09-1998
		PL 314683 A	16-09-1996
		ZA 9409085 A	16-05-1996
		US 5503704 A	02-04-1996
		CA 2136456 A	19-05-1995
		US 5837275 A	17-11-1998
WO 9323092 A	25-11-1993	US 5681575 A	28-10-1997
		AT 169829 T	15-09-1998
		AU 673170 B	31-10-1996
		AU 4055893 A	13-12-1993
		CA 2134217 A	25-10-1993
		CN 1082625 A	23-02-1994
		DE 69320472 D	24-09-1998
		DE 69320472 T	24-12-1998
		EP 0641224 A	08-03-1995
		ES 2119899 T	16-10-1998
		HU 69766 A	28-09-1995
		IL 105726 A	22-02-1998
		JP 8500392 T	16-01-1996
		MX 9302877 A	29-07-1994
		NZ 252076 A	24-02-1997
		US 5837275 A	17-11-1998
		US 5753251 A	19-05-1997
		US 5770255 A	23-06-1998
EP 0395300 A	31-10-1990	CA 1337173 A	03-10-1995
		AT 143731 T	15-10-1996
		DE 69028728 D	07-11-1996
		DE 69028728 T	06-03-1997
		DK 395300 T	02-12-1996
		JP 2300661 A	12-12-1990
		US 5124172 A	23-06-1992
EP 0430608 A	05-06-1991	AU 647421 B	24-03-1994
		AU 6573590 A	06-06-1991
		CA 2029172 A	29-05-1991
		DE 69016950 D	23-03-1995
		DE 69016950 T	14-06-1995
		JP 3182246 A	08-08-1991
		US 5181905 A	26-01-1993
WO 9211043 A	09-07-1992	CA 2033107 A	25-06-1992
		AU 669652 B	20-06-1996
		AU 9111491 A	22-07-1992
		EP 0564503 A	13-10-1993
		JP 6503736 T	28-04-1994
		US 5605057 A	22-10-1997

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 98/00102

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0255248 A	03-02-1988	US 4728323 A	01-03-1988
		AU 595333 B	29-03-1990
		AU 7427987 A	28-01-1988
		CA 1279573 A	29-01-1991
		DE 3780229 A	13-08-1992
		JP 2106690 C	06-11-1996
		JP 8024709 B	13-03-1996
		JP 63035260 A	15-02-1988
		KR 9506936 B	26-06-1995
		MX 165268 B	04-11-1992
GB 2132939 A	18-07-1984	NONE	
GB 2281212 A	01-03-1995	NONE	
GB 2298612 A	11-09-1996	NONE	
GB 2121355 A	21-12-1983	NONE	
US 5030302 A	09-07-1991	WO 8706525 A	05-11-1987
		EP 0264395 A	27-04-1988
		FI 875711 A	23-12-1987
		JP 63503131 T	17-11-1988